

Appln No. 10/632,338
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Reply to Office action of February 17, 2006

REMARKS/ARGUMENTS

Claims 1-24 are pending in the above-referenced matter.

Claims 1, 8, 14, 15 and 21 have been amended and claims 22-24 added to further define Applicant's invention.

This is a Response to the Office Action dated February 17, 2006 wherein claims 1-3, 7-9, 11-12, 14-15, 17, and 21 are rejected under §102(b) as being anticipated by Yoshikawa (U.S. Patent No. 3,398,687) and the following claims are rejected under §103(a) for obviousness by Yoshikawa and one or more secondary references: (1) claims 4-5, 10, 18-19 by Yoshikawa in view of Hackett (U.S. Patent No. 5,378,121); (2) claims 6 and 16 by Yoshikawa in view of Hamasaki et al. (U.S. Patent No. 6,287,090); (3) claim 13 by Yoshikawa (U.S. Patent No. 3,398,687) in view Kobayashi et al. (U.S. Patent No. 5,692,886); and (4) claim 20 over Yoshikawa and ordinary skill in the art. In view of the amendments set forth above and the remarks that follow, reconsideration and a notice of allowance are respectfully requested.

§102(b) Rejection of 1-3, 7-9, 11-12, 14-15, 17, and 21 by Yoshikawa

In rejecting claims 1-3, 7-9, 11-12, 14-15, 17, and 21, the Examiner contends that Yoshikawa discloses a pump comprising a casing having two casing sections (Fig. 1, items 1, 2) defining a casing cavity; an electric motor comprising a motor casing having two ends and a side positioned there between mounted inside the casing cavity having a motor shaft protruding from one of the ends (Fig. 1, item 3), a seal mounted on the motor shaft for deterring fluids from leaking into an interior space of the motor casing (Fig. 2, items 13, 14), an impeller mounted on an end of the motor shaft adjacent the seal (Fig. 1, item 6); and a flow channel formed between an inlet nozzle and an outlet nozzle inside the casing cavity adapted to permit fluids drawn from the inlet nozzle to flow over at least a portion of the side of the electrical motor to cool the electrical motor before exiting the outlet nozzle.

The Examiner further contends that Yoshikawa discloses an inlet nozzle positioned on one of the tapered ends and an outlet nozzle positioned on the other tapered end (Fig. 1, items 1a,

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2a), one of the two casing sections comprising a terminal nozzle for terminating a power cord (Fig. 1, item 7a), at least one support leg located on an exterior surface of the casing for supporting the centrifugal pump (Fig. 1, item 10), a motor electrical cord positioned over an end of the electrical motor comprising an indentation section (Fig. 2, item 13), a casing having a football shape configuration. Furthermore, as alleged by the Examiner, since Yoshikawa has the same structure as claimed, it is inherent that Yoshikawa's device would be able to perform the recited method steps.

Preliminarily, for a reference to anticipate a claimed invention under §102(b), it must adequately meet the terms of the claimed invention interpreted in light of the specification of the application. As set forth in the statute, the single prior art reference must disclose each and every element of the claim under consideration. Moreover, it cannot be rebuilt or reoriented by the utilization of Applicant's teachings in an attempt to create an anticipatory structure.

Independent claim 1 recites a centrifugal pump comprising a casing having two casing sections with each casing section comprising an external shell and an inner shell defining a gap therebetween; a casing cavity defined by the two inner shells having an electrical motor comprising a motor casing having two ends and a side positioned inside the casing cavity having a motor shaft protruding from one of the ends, a seal mounted on the motor shaft for sealing an interior space of the motor casing, an impeller mounted on an end of the motor shaft adjacent the seal; and a flow channel formed between an inlet nozzle and an outlet nozzle inside the casing cavity adapted to permit fluids drawn from the inlet nozzle to flow over at least a portion of the side of the electrical motor to cool the electrical motor before exiting the outlet nozzle.

Thus, claim 1 clearly recites, in part, a centrifugal pump comprising a casing having two casing sections with each casing section comprising an external shell and an inner shell defining a gap therebetween; a casing cavity defined by the two inner shells having an electrical motor comprising a motor casing having two ends and a side positioned inside the casing cavity having a motor shaft protruding from one of the ends.

As shown in FIGs. 4 and 6 of the instant application, the two casing sections each comprises an inner shell and an outer shell defining a space therebetween. When the two casing

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sections are coupled together, as shown in FIGs. 1 and 2, the two casing sections define a cavity for accommodating an electrical motor having an impeller mounted thereon.

Applicant submits that Yoshikawa does not anticipate claim 1 by disclosing, either expressly or inherently, each and every element of the claimed centrifugal pump. Among other things, Yoshikawa discloses a pump (FIG 1) comprising a lower casing member 1 threadedly connected to an upper casing member 2 defining a cavity therebetween. A motor comprising a motor casing 3 having a shaft 5 with an impeller 6 mounted thereon is mounted inside the casing cavity.

Yoshikawa also discloses an intermediate pump stage (FIG. 2) having an impeller 16 and a shaft 5 that projects through both ends of the pump casing 11/12. The intermediate pump stage allows it to connect to the first pump stage shown in FIG. 1 on one side of the shaft and to another pump on its other shaft end.

An end pump stage is shown in FIG. 3 of the Yoshikawa reference. This pump stage has an impeller 16 and a shaft 15a that ends internally of the pump casing 12/13. This last pump stage is thus configured to be mounted to the other shaft end of the intermediate pump stage shown in FIG. 2 or to the first stage pump shown in FIG. 1 if limiting the pump to only two stages.

FIG. 4 shows the pump stage of FIG. 3 coupled to the pump stage of FIG. 1.

No where does Yoshikawa disclose, teach, or suggest a centrifugal pump comprising a casing having two casing sections with each casing section comprising an external shell and an inner shell defining a gap therebetween; a casing cavity defined by the two inner shells having an electrical motor comprising a motor casing having two ends and a side positioned inside the casing cavity having a motor shaft protruding from one of the ends. Accordingly, Yoshikawa cannot anticipate claim 1 under §102(b)

Because claims 2, 3 and 7 depend, either directly or indirectly from claim 1, they too are allowable.

Independent claim 8 a method for pumping fluids using a centrifugal pump comprising: connecting an inlet line and an outlet line to a pump casing, the pump casing comprising an inlet

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nozzle located on an inlet housing cover and an outlet nozzle located on an outlet housing cover, turning on an electrical motor comprising a motor casing having two ends, a side, and a motor shaft extending through one of the ends; the motor being mounted to the outlet housing cover and having a motor electrical cover covering the end of the electrical motor opposite the shaft end and being disposed radially between the pump casing and the motor casing; passing fluids through the inlet nozzle and out the outlet nozzle by generating a suction at the inlet nozzle with an impeller mounted on an end of the motor shaft; sealing the electrical motor with a dynamic packing or a mechanical seal; and cooling the electrical motor by providing a flow passage between the inlet nozzle and the outlet nozzle and allowing at least a portion of the fluids to flow pass at least a portion of the side of the motor casing before exiting the outlet nozzle.

Thus, claim 8 clearly recites, in part, a method for pumping fluids comprising the step of turning on an electrical motor comprising a motor casing having two ends, a side, and a motor shaft extending through one of the ends; the motor being mounted to the outlet housing cover and having a motor electrical cover covering the end of the electrical motor opposite the shaft end and being disposed radially between the pump casing and the motor casing.

Applicant submits that Yoshikawa does not teach, contemplate, or appreciate the method for pumping fluids recited in independent claim 8. Among other things, Yoshikawa discloses a pump comprising an internally mounted electrical motor. However, the electrical motor is mounted to the inlet section of the pump casing 1 rather than the outlet casing 2 (See, e.g., Yoshikawa reference, Col. 1:38-44). Yoshikawa's mounting arrangement cannot easily be modified due to the threaded coupling between the two casing sections 1, 2 and the terminal port of the cable 7 on the upper casing section 2.

Furthermore, even if the motor disclosed by Yoshikawa can somehow be modified to be mounted to the upper casing cover 2, Yoshikawa does not disclose a motor electrical cover in the manner recited in claim 8. Accordingly, because Yoshikawa does not disclose each and every element of the method recite by claim 8, it cannot anticipate claim 8.

Because claim 9, 11, and 12 depend, either directly or indirectly, from claim 8, they too are allowable for at least the same reasons as claim 8.

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Independent claim 14 recites a centrifugal pump comprising an electrical motor having a motor casing, a motor shaft and an impeller mounted on the motor shaft positioned inside an interior cavity of a pump casing having a parting line, the pump casing comprising an inlet nozzle on one side of the parting line and an outlet nozzle on an opposite side of the parting line, a flow channel extends between the inlet nozzle and the outlet nozzle, the flow channel being formed interiorly of the pump casing and comprises a center flow section and two arcuate side interface sections with the center flow section being spaced radially apart from the motor casing a greater distance than the two arcuate side interface sections for channeling fluid flow through the flow channel; and at least one support leg located on an exterior surface of the casing for supporting the centrifugal pump.

Thus, claim 14 clearly recites, in part, a centrifugal pump comprising a flow channel being formed interiorly of the pump casing and comprises a center flow section and two arcuate side interface sections with the center flow section being spaced radially apart from the motor casing a greater distance than the two arcuate side interface sections for channeling fluid flow through the flow channel.

Applicant submits that Yoshikawa does not teach, contemplate, or appreciate the centrifugal pump recited in independent claim 14. Among other things, Yoshikawa disclose a pump wherein the electrical motor 3 is mounted concentrically internally of the pump casing 1/2 by a plurality of guide vanes 4 (See, e.g., Yoshikawa reference, Col. 1:38-44). Thus, Yoshikawa does not disclose a pump comprising a flow channel being formed interiorly of the pump casing and comprises a center flow section and two arcuate side interface sections with the center flow section being spaced radially apart from the motor casing a greater distance than the two arcuate side interface sections for channeling fluid flow through the flow channel.

Accordingly, Yoshikawa cannot anticipate claim 14 by disclosing each and every element of the claimed centrifugal pump.

Because claims 15 and 17 depend from claim 14, they too are allowable over Yoshikawa for at least the same reasons as claim 14.

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Independent claim 21 recites a centrifugal pump comprising a pump casing having two casing sections removeably attached to one another at a parting line, the two casing sections defining an interior cavity having an electrical motor comprising a motor housing having a motor shaft projecting through one end of the motor housing and having an impeller mounted thereon and having an opposite end wholly encased inside the motor housing positioned inside the pump casing interior cavity, wherein the pump casing comprises a geometrical shape having a large mid-section and two tapered ends with an inlet nozzle on one of the tapered ends and a outlet nozzle on the other tapered end.

Thus, claim 21 clearly recites a centrifugal pump comprising an electrical motor comprising a motor housing having a motor shaft projecting through one end of the motor housing and having an impeller mounted thereon and having an opposite end wholly encased inside the motor housing positioned inside the pump casing interior cavity.

Applicant submits that Yoshikawa does not teach, contemplate, or appreciate the centrifugal pump recited in independent claim 21. Among other things, Yoshikawa discloses a multistage pump (FIG. 4 of the '687 Yoshikawa reference) that can also operate as a single stage pump (FIG. 1 of the '687 Yoshikawa reference). Because of this dual design, the pump shaft 5 of the first stage (FIG. 1) is open or exposed on both ends of the shaft so that the shaft can be coupled to another shaft section of another pump stage when operating as a multi-stage pump. Hence, Yoshikawa does not disclose a centrifugal pump comprising an electrical motor comprising a motor housing having a motor shaft projecting through one end of the motor housing and having an impeller mounted thereon and having an opposite end wholly encased inside the motor housing positioned inside the pump casing interior cavity.

Accordingly, Yoshikawa cannot anticipate claim 21 by disclosing each and every element of the claimed centrifugal pump.

Because newly added claims 21-24 depend from claim 21, they too are allowable over Yoshikawa for at least the same reasons as claim 21.

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Rejection of Claims 4, 5, 10, 18, and 19 under §103(a) by Yoshikawa in view of Hackett

In rejecting claims 4, 5, 10, 18, and 19, the Examiner contends that Yoshikawa discloses as set forth above for the rejection of independent claims 1, 8, and 14. The Examiner then relied on Hackett to disclose a pump base and a closed impeller.

Because claims 4 and 5 depend from independent claim 1, claim 10 depends from independent claim 8, and claims 18 and 19 depend from independent claim 14 and because Hackett does not make up for the shortcomings discussed above for independent claims 1, 8, and 14, the rejection is traversed.

Rejection of Claims 6 and 16 under §103(a) by Yoshikawa in view of Hamasaki et al.

In rejecting claims 6 and 16, the Examiner relied on Yoshikawa as discussed above for independent claims 1 and 14 and on Hamasaki et al. to disclose a "tongue and groove" connection. However, since the Hamasaki et al. reference does not make up for the shortcomings discussed above for independent claims 1 and 14, the rejection is traversed.

Rejection of Claim 13 under §103(a) by Yoshikawa in view of Kobayashi et al.

In rejecting claim 13, the Examiner relied on Yoshikawa as discussed above for independent claim 8 and on Kobayashi et al. to disclose a pump having a parting line sealed by fastening a plurality of fastener means and compressing a compressible seal therebetween.

However, because the Kobayashi et al. reference does not make up for the shortcomings discussed above for independent claim 8, the rejection is traversed.

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Rejection of Claim 20 under §103(a) by Yoshikawa and Ordinary Skill in the Art

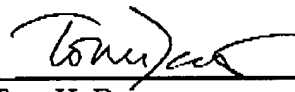
In rejecting claim 20, the Examiner relied on Yoshikawa as discussed above for independent claim 14 and on ordinary skill in the art for the teaching that the pump can operate on 110-volts.

However, because the ordinary skill in the art does not make up for the shortcomings discussed above for independent claim 14, the rejection is traversed.

In view of the amendments and the remarks set forth above, the application is thought to be in condition for allowance and early notice thereof is respectfully requested.

Should the Examiner finds it necessary to speak with Applicant's attorney, he is invited to contact the undersigned at the telephone number identified below.

Respectfully submitted,
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